

## ***5.2 Severe Winter Storms***

A major winter storm hazard event has been determined to have a **Medium** likelihood of occurrence in Benton County within the five-year planning cycle of this Plan. Therefore, although some hazard characterization information is presented below, no further risk assessment has been performed for winter storm hazards. Additional analyses to further characterize the risks of this hazard and the development of suitable mitigation action items will be conducted in the future based on periodic reviews of this hazard mitigation plan and available resources

### **5.2.1 Nature of the Hazard**

Severe winter storms pose a significant risk to life and property by creating conditions that disrupt essential regional systems such as public utilities, telecommunications, and transportation routes. Severe winter storms can produce rain, freezing rain, ice, snow, cold temperatures, and wind. Ice storms accompanied by high winds can have destructive impacts, especially to trees, power lines, and utility services.

#### **Historical Severe Winter Storm Events**

To be determined.

#### **Characteristics of Severe Winter Storms**

Winter storms are deceptive killers. Many of the deaths that occur are indirectly related to the actual storm, including deaths resulting from traffic accidents on icy roads, heart attacks while shoveling snow, and hypothermia from prolonged exposure to the cold. Property is at risk due to flooding (see Chapter 4.1) and landslides (see Chapter 5.1) resulting from heavy snow melt. Trees, power lines, telephone lines, and television and radio antennas can be impacted by ice, wind, snow, and falling trees and limbs. Saturated soil can cause trees to lose their ability to stand and fall on houses, cars, utilities, and other property. Similarly, if streets are icy, it is difficult for emergency personnel to travel and may pose a secondary threat to life if police, fire, and medical personnel cannot respond to calls.

#### **Roads and Bridges**

Snow and ice events resulting in icy road conditions can lead to major traffic accidents. Roads blocked by fallen trees during a windstorm may have tragic consequences for people who need access to emergency services. The ability to travel after a natural hazard event is a priority issue for residents, organizations, and providers of essential services such as hospitals and utilities.

#### **Power Lines**

Historically, falling trees can be a major cause of power outages resulting in interruption of services and damaged property. In addition, falling trees can bring electric power lines down, creating the possibility of lethal electric shock. Snow and ice can also damage utility lines and cause prolonged power outages. Rising population growth and new infrastructure in the City creates a higher probability for damage to occur from severe winter storms as more life and property are exposed to risk.

#### **Water Lines**

The most frequent water system problem related to cold weather is a break in cast iron mainlines. Breaks frequently occur during severe freeze events, as well as during extreme cooling periods during the months of October, November, and December. Another common problem during severe freeze events is the

failure of commercial and residential water lines. Inadequately insulated potable water and fire sprinkler pipes can rupture and cause extensive damage to property.

### **5.2.2 Severe Winter Storm Hazard Assessment**

#### **Hazard Identification**

A severe winter storm is generally a prolonged event involving snow or ice. The characteristics of severe winter storms are determined by the amount and extent of snow or ice, air temperature, wind speed, and event duration. Weather and typical storm events in Benton County include:

- Thunderstorms occur on 10 to 15 days between March and October accompanied by usually light rainfall, but hail and heavy showers can occur;
- Winter season snowfall has ranged from less than ½ inch (1957-58) to 44 inches (1915-16), accumulations have ranged from 4 inches to 21 inches (Feb. 1916);
- Snow cover can melt rapidly by rain or warm Chinook winds;
- Severe winter and spring flooding of the lower Yakima River can occur as a result of snowmelt and/or river icing conditions;

#### **Vulnerability Assessment**

A vulnerability assessment that describes the number of lives or amount of property exposed to elements of severe winter storms has not yet been conducted for Benton County. However, severe winter storms can cause power outages, transportation and economic disruptions, and pose a high risk for injuries and loss of life. The events can also require needed shelter and care for adversely impacted individuals. The County has suffered severe winter storms in the past that brought economic hardship and affected the life safety of County residents.

#### **Risk Analyses**

A risk assessment for winter storms has not been conducted.

### **5.2.3 Community Issues**

#### **Current Conditions**

To be determined.

#### **Ongoing Mitigation Activities**

Existing mitigation activities include current mitigation programs and activities that are being implemented by local, regional, state, or federal agencies or organizations.

#### **National Weather Service**

The Office of the National Weather Service issues severe winter storm watches and warnings when appropriate to alert government agencies and the public of possible or impending weather events. The

watches and warnings are broadcast over NOAA weather radio and are forwarded to the local media for retransmission using the Emergency Alert System.

#### **5.2.4 Severe Winter Storm Mitigation Strategy**

Mitigation action items provide direction on specific activities that organizations and residents in Benton County can undertake to reduce risk and prevent loss from hazards. The following represent potential mitigation strategies the municipalities of Benton County may consider in the future:

- a) Develop and improve strategies for debris management for severe winter storm events, i.e. develop coordinated management strategies for de-icing roads, plowing snow, clearing roads of fallen trees, and clearing debris from public and private property.
- b) Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms. Partner with responsible agencies and organizations to design and implement programs that reduce risk to life, property, and utility systems; and develop partnerships between utility providers and City and local public works agencies to document known hazard areas.
- c) Provide additional public awareness of severe winter storm mitigation activities. Collect information on public education materials for protecting life, property, and the environment from severe winter storm events; distribute educational materials to residents and public and private sector organizations regarding evacuation routes during road closures; and target the vulnerable populace for disseminating preparedness information.
- d) Improve local weather monitoring to attain earlier severe winter storm warnings. Coordinate with appropriate organizations to evaluate the need for more weather stations and/or weather instrumentation.
- e) Provide protection for critical facilities. Structural initiatives to protect critical facilities include:
  - Retrofit/reconstruct facility roof and other components for heavier snow/ice loading
  - Install standby electric power for facility or component needs
  - Improve physical access to facility or system component under storm conditions
  - Purchase snow removal equipment for quicker access and egress
  - Install below grade electric power and other utility services to facility
  - Protect computers and telecommunications capabilities for power loss
  - Provide redundant utility and facility services systems

Non-structural initiatives to protect critical facilities include:

- Conduct engineering studies of snow/ice load capabilities of the facility
- Develop procedures for pre-season preparations (e.g., install snow fence)
- Develop procedures for safe facility closure prior to storm's arrival
- Develop procedures for relocation of operations to another facility
- Develop plan for transporting personnel to/from facility

## 5.2.5 Severe Winter Storm Resources

### State Resources

#### **Office of the Washington State Climatologist**

The Washington State Climatologist collects, manages, and maintains Washington weather and climate data. The State Climatologist provides weather and climate information to those within and outside the state of Washington and educates the citizens of Washington on current and emerging climate issues. The State Climatologist also performs independent research related to weather and climate issues.

**Contact:** Washington State Climatologist

**Phone:** (206) 616-5346

**Website:** <http://www.climate.washington.edu> **Email:** [climate@atmos.washington.edu](mailto:climate@atmos.washington.edu)

### Federal Resources

#### **National Weather Service, Pendleton Weather Forecast Office**

The National Weather Service (NWS) provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure, which can be used by other governmental agencies, the private sector, the public, and the global community.

**Contact:** National Weather Service

**Address:** 2001 NW 50<sup>th</sup> Drive

**Phone:** (541) 276-7832

**Website:** <http://wrh.noaa.gov/>

#### **National Oceanic and Atmospheric Administration (NOAA)**

NOAA's historical role has been to predict environmental changes, protect life and property, provide decision makers with reliable scientific information, and foster global environmental stewardship.

**Contact:** National Oceanic and Atmospheric Administration

**Address:** 14th Street & Constitution Avenue, NW, Room 6013, Washington, DC 20230

**Phone:** (202) 482-6090

**Fax:** (202) 482-3154

**Website:** <http://www.noaa.gov> **Email:** [answers@noaa.gov](mailto:answers@noaa.gov)

### Additional Resources

*Public Assistance Debris Management Guide*, Federal Emergency Management Agency (July 2000).

The Debris Management Guide was developed to assist local officials in planning, mobilizing, organizing, and controlling large-scale debris clearance, removal, and disposal operations. Debris management is generally associated with post-disaster recovery. While it should be compliant with local and City emergency operations plans, developing strategies to ensure strong debris management is a way to integrate debris management within mitigation activities. The *Public Assistance Debris Management Guide* is available in hard copy or on the FEMA website.

**Contact:** FEMA Distribution Center

**Address:** 130 228th Street, SW, Bothell, WA 98021-9796

**Phone:** (800) 480-2520 **Fax:** (425) 487-4622

**Website:** <http://www.fema.gov/rrr/pa/dmgtoc.shtm>